AMENDMENTS TO THE CLAIMS

This Listing of the Claims will replace all prior versions, and listings, of claims in this application.

Listing of the Claims:

1.   (Currently Amended) A communications device for detecting user transmitted symbols encoded in spread spectrum waveforms (hereinafter "user waveforms") comprising

a first memory,

a set of one or more first processing elements, coupled to the first memory, the set of first processing elements generating a matrix (hereinafter "~~Rr~~-matrix") representative of cross correlations among user waveforms and storing the ~~that r~~R-matrix to contiguous locations within the first memory,

a second processing element coupled with the first memory,

the second processing element accessing the R-matrix from said contiguous locations within the first memory and generating symbol estimates as a composition of the R-matrix.

2.   (Canceled)

3.   (Original) The device of claim 1, comprising

a second memory coupled with the set of first processing elements and a third processing element,

the third processing element generating a matrix (hereinafter "gamma-matrix") representative of a correlation between a code associated with one user and those associated with one or more other users,

the third processing element places the gamma-matrix in the second memory.

4.   (Currently Amended) The device of claim 3, comprising

the third processing element generating the gamma-matrix and placing that matrix in contiguous locations ~~location~~ within the second memory,

the set of first processing elements accessing the gamma-matrix from contiguous locations within the second memory and generating the R-matrix.

5.   (Currently Amended) The device of claim 3, comprising

a multi-port switch coupled to the third processing element and to the second memory,

wherein the third processing element places the gamma-matrix in the second memory via the multi-port ~~data~~ switch.

6.   (Original) The device of claim 3, wherein the gamma-matrix is a composition of a complex conjugate of the code associated with one user and a complex conjugate of the codes associated with one or more other users.

7.   (Original) The device of claim 3, wherein the third processing element updates the gamma-matrix as users are added or removed from the spread spectrum system.

8.   (Original) The device of claim 3, wherein the set of first processing elements generate the R-matrix as a composition of the gamma-matrix.

9.   (Currently Amended) A communications device for detecting user transmitted symbols encoded in spread spectrum waveforms (hereinafter "user waveforms") comprising

a first memory,

a set of one or more first processing elements coupled to the first memory, the set of first processing elements generating a matrix (hereinafter "R-matrix") representative of cross correlations among user waveforms and storing the R-matrix to contiguous locations within the first memory,

a second processing element coupled with the first memory,

the second processing element accessing the R-matrix from contiguous locations within the first memory and generating symbol estimates as a composition of the R-matrix,

~~The device of claim 1, comprising~~

a host controller coupled to each of the set of first processing elements, wherein the host controller generates a partitioning of the R-matrix, that partitioning divides the R-matrix into one or more portions based on a number of users and a number of available processing elements,

the host controller assigns to each first processing element a portion of the R-matrix to generate according to the partitioning,

each of the first processing elements generating the assigned portion of the R-matrix according to the partitioning,

the host controller re-calculates the partitioning of the R-matrix when a user is added or removed from the spread spectrum system, and assigns a new portion of the R-matrix to each first processing element according to that new partitioning.

10.   (Original) The device of claim 9, wherein each first processing element places its respective portion of the R-matrix in the first memory according to its respective partition such that each portion of the R-matrix is contiguous with respect to the other portions.

11.   (Currently Amended) A communications device for detecting user transmitted symbols encoded in spread spectrum waveforms (hereinafter "user waveforms") comprising

a first memory,

a set of one or more first processing elements, coupled to a direct memory access engine (hereinafter "DMA engine"), the set of first processing elements generating a matrix

(hereinafter "R-matrix") representative of cross correlations among user waveforms, the DMA engine coupled with the first memory,

the DMA engine storing the ~~that~~ R-matrix to contiguous locations within the first memory,

a second processing element coupled with the first memory,

the second processing element accessing the R-matrix from contiguous locations within the first memory and generating symbol estimates as a composition of the R-matrix.

12.   (Canceled).

13.   (Original) The device of claim 11 comprising

a second memory coupled with the set of first processing elements and a third processing element,

the third processing element generating a matrix (hereinafter "gamma-matrix") representative of a correlation between a code associated with one user and those associated with one or more other users,

the third processing element places the gamma-matrix in the second memory.

14.   (Currently Amended) The device of claim 13, wherein ~~11, comprising~~

the third processing element generates ~~generating~~ the gamma-matrix and places ~~placing~~ that matrix in contiguous locations ~~location~~ within the second memory, and

the set of first processing elements accesses ~~accessing~~ the gamma-matrix from contiguous locations within the second memory and generates ~~generating~~ the R-matrix.

15.   (Currently Amended) The device of claim 13, comprising

a multi-port switch coupled to the third processing element and to the second memory,

wherein the third processing element places the gamma-matrix in the second memory via the data switch.

16.   (Original) The device of claim 13, wherein the gamma-matrix is a composition of a complex conjugate of the code associated with one user and a complex conjugate of the codes associated with one or more other users.

17.   (Original) The device of claim 13, wherein the third processing element updates the gamma-matrix as users are added or removed from the spread spectrum system.

18.   (Original) The device of claim 13, wherein the set of first processing elements generate the R-matrix as a composition of the gamma-matrix.

19.   (Original) The device of claim 11, comprising

a host controller coupled to each of the set of first processing elements, the host controller generating a partitioning of the R-matrix, that partitioning divides the R-matrix into one or more portions based on a number of users and a number of available processing elements,

the host controller assigns to each first processing element a portion of the R-matrix to generate according to the partitioning,

each first processing element generating the assigned portion of the R-matrix according to the partitioning,

the host re-calculating the partitioning of the R-matrix when a user is added or removed from the spread spectrum system, and assigning a new portion of the R-matrix to each first processing element according to that new partitioning.

20.   (Original) The device of claim 19, wherein DMA engine places each portion of the R-matrix in the first memory according to the partitioning such that the each portion of the R-matrix is contiguous with respect to the adjacent portions.

21.   (Currently Amended) A communications device for detecting user transmitted symbols encoded in spread spectrum waveforms (hereinafter "user waveforms") comprising

a first memory,

a set of one or more first processing elements, coupled to the first memory, the set of first processing elements generating a matrix (hereinafter "R-matrix") representative of cross correlations among user waveforms and storing that R-matrix to contiguous locations within the first memory,

a second processing element coupled to the first memory, the second processing element accessing R-matrix from said contiguous locations location within the first memory and generating symbol estimates as a composition of the R-matrix,

a second memory coupled with the set of first processing elements and a third processing element,

the third processing element generating a matrix (hereinafter "gamma-matrix") representative of a correlation between a code associated with one user and those associated with one or more other users,

wherein the third processing element places the gamma-matrix in the second memory.

22.   (Canceled).

23.   (Currently Amended) The device of claim 21, wherein 22, comprising

the third processing element places generating the gamma-matrix and placing that the gamma-matrix in contiguous locations location within the second memory,

the set of first processing elements accessing the gamma-matrix from contiguous locations within the second memory and generating the R-matrix.

24.   (Currently Amended) The device of claim 2122, comprising

7

a multi-port switch coupled to the third processing element and to the second memory,

the third processing element places the gamma-matrix in the second memory via the ~~data~~ switch.

25.   (Currently Amended) The device of claim 21~~22~~, wherein the gamma-matrix is a composition of a complex conjugate of the code associated with one user and a complex conjugate of the codes associated with one or more other users.

26.   (Currently Amended) The device of claim 21~~22~~, wherein the third processing element updates the gamma-matrix as users are added or removed from the spread spectrum system.

27.   (Currently Amended) The device of claim 21~~22~~, wherein the set of first processing elements generate the R-matrix as a composition of the gamma-matrix.

28.   (Original) The device of claim 21, comprising

a direct memory access engine (hereinafter "DMA engine") coupled with the set of second processing elements and the first memory,

the DMA engine placing the R-matrix in contiguous locations within the first memory.

29.   (Original) The device of claim 21, comprising

a direct memory access engine (hereinafter "DMA engine") coupled with the third processing element and the second memory,

the DMA engine placing the gamma-matrix in contiguous locations within the second-memory.